

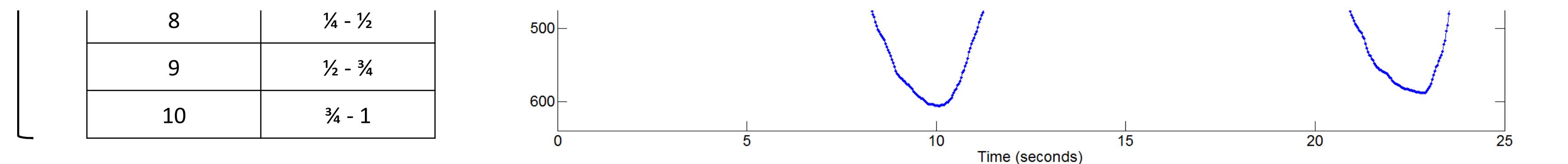


GazeAppraise

A New Method for Categorizing Scanpaths

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- Performs unsupervised cluster analysis on spatiotemporal sequences
- Requires zero-to-minimal preprocessing
- Does not require a priori specification of areas of interest

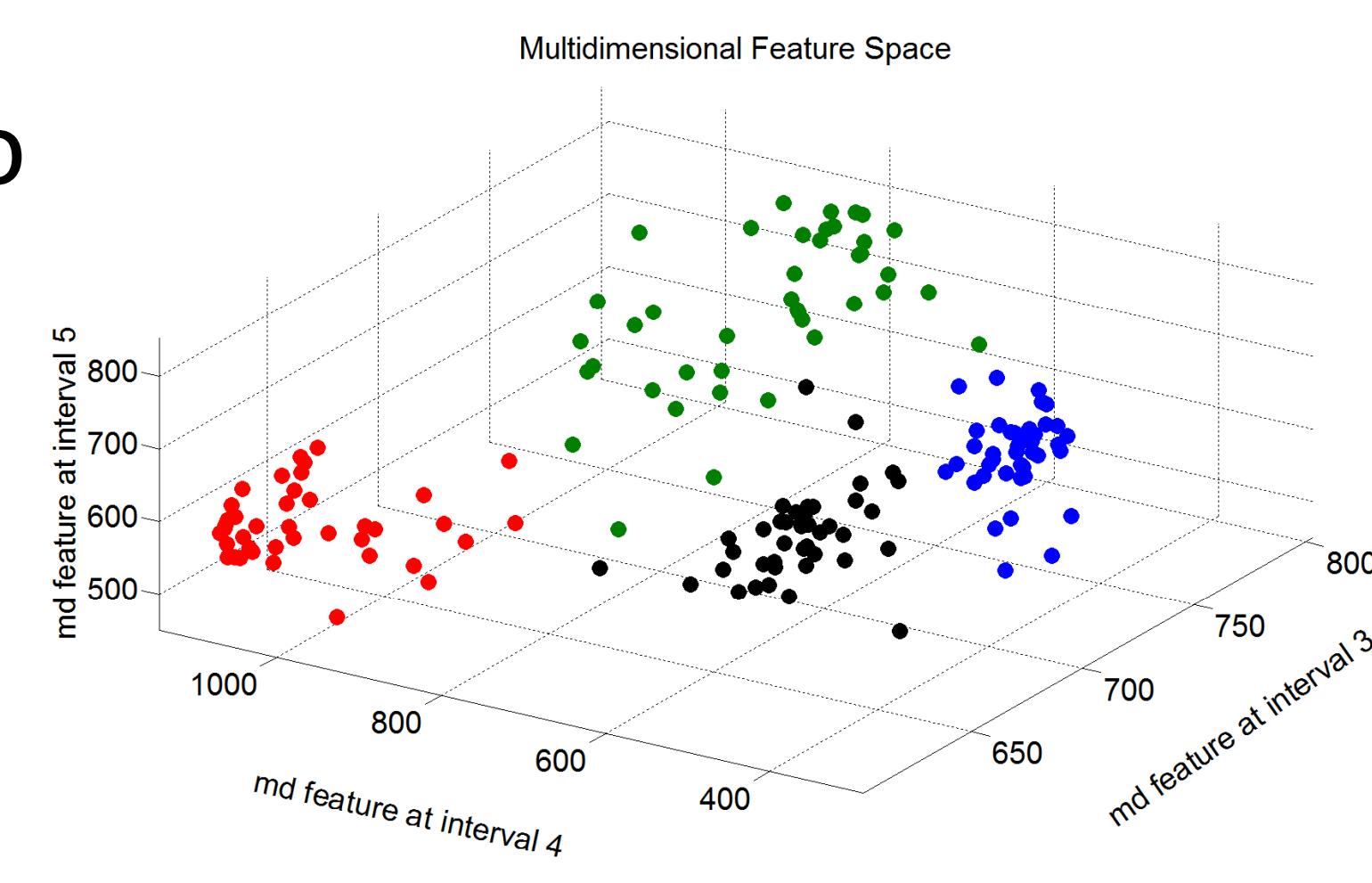


Vertical position of the gaze of an ideal viewer versus elapsed time for the star stimulus. Three upper, horizontal lines show temporal intervals used to calculate features. Triangles show feature values at each temporal interval.

- Feature metrics can use any quantity calculable from samples in each temporal interval
- This study used median x and median y positions of raw gaze data

Cluster multidimensional scanpath features

- Density based clustering algorithm (DBSCAN²) does not require a priori knowledge of number of clusters
 - minPts: minimum # of members to form a cluster
 - Eps: neighborhood radius



Cluster				
	O'	S'	Star	Swirl
1	40			
2	0	41		
3	0	0	40	
4	0	0	0	41
Outlier	1	0	1	0

98.8% recall/sensitivity and 100% precision

References

1. RINTOUL, M., WILSON, A., VALICKA, C., SHEAD, T., RODRIGUEZ CZUCHLEWSKI, K., KEGELMEYER, W., AND NEWTON, B., 2015. Panther: Trajectory analysis. Technical report
2. ESTER, M., KRIEGEL, H., SANDER, J., AND XU, X. 1996. A density-based algorithm for discovering clusters in large spatial databases with noise. KDD-96 Proceedings. Second International Conference on Knowledge Discovery and Data Mining, 226–231